

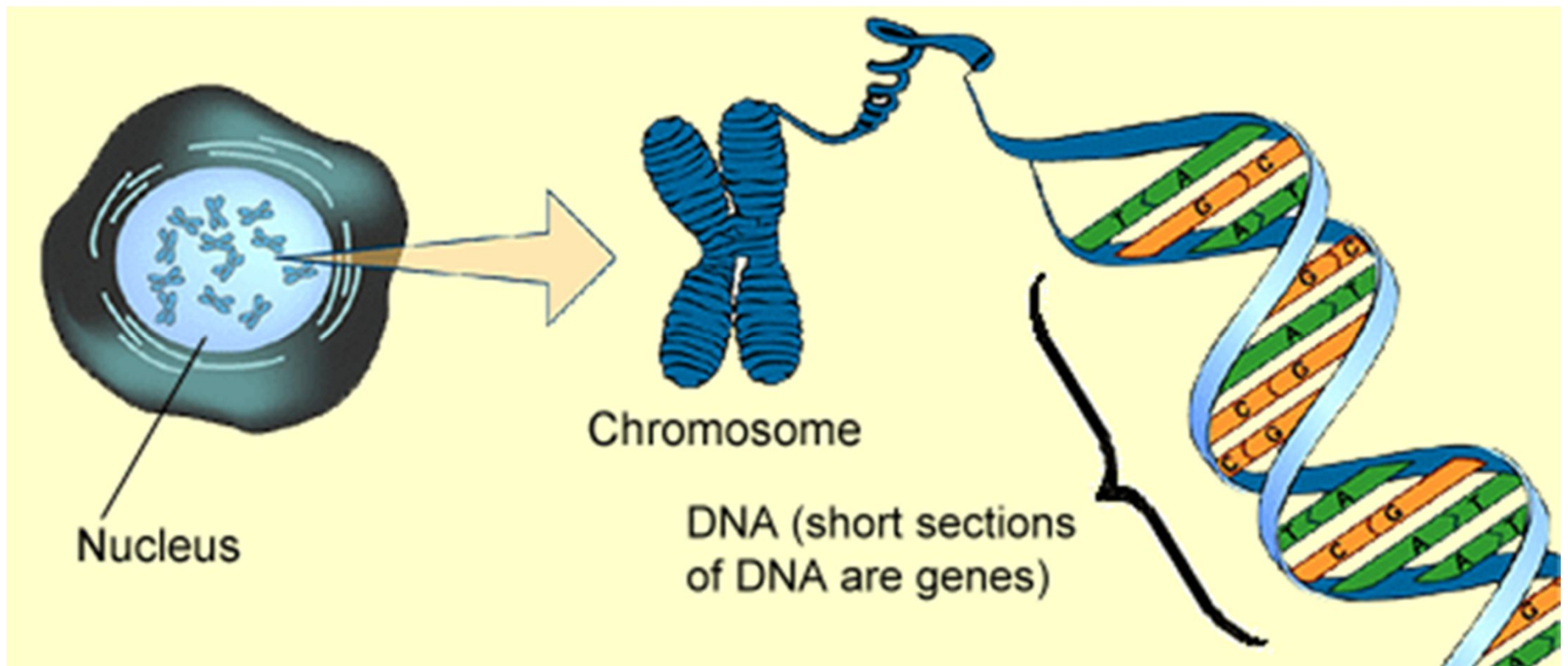
Chapter 12

DNA: The Genetic Material

Discovery of the Genetic Material

- Scientists wanted to know what made inheritance happen – what molecule?
- What they knew:
 - Genetic information carried on the chromosome
 - Chromosome was made of DNA and protein
- Which one was the molecule responsible?

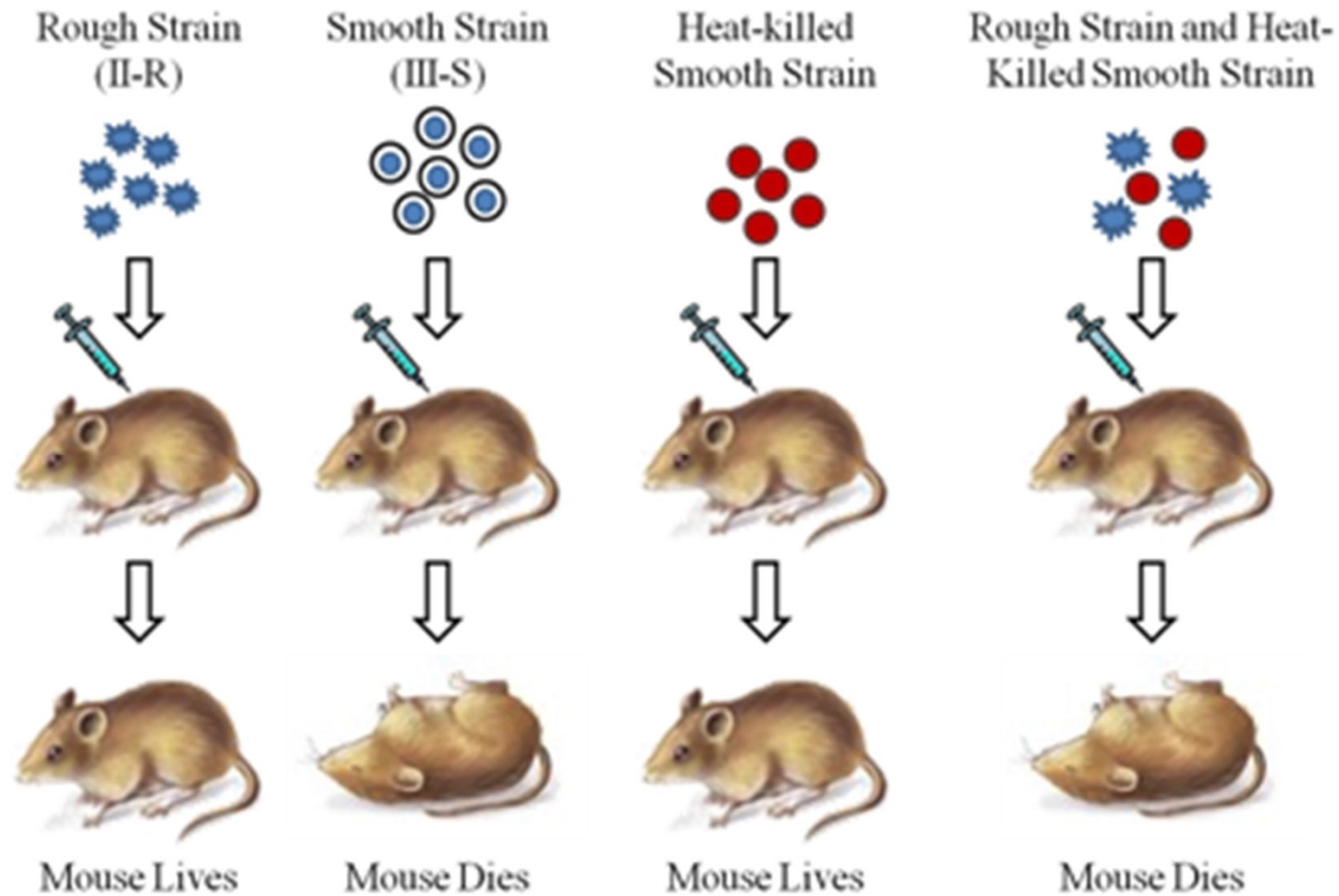
Discovery of the Genetic Material



Discovery of Genetic Material

- Frederick Griffith (1928)
 - Studied different types of pneumonia bacteria
 - Discovered one could be transformed into the other
 - Found that one strain mixed with the other killed a mouse
 - When cultured – only one strain was found
 - This means that a transformation happened from one type to another

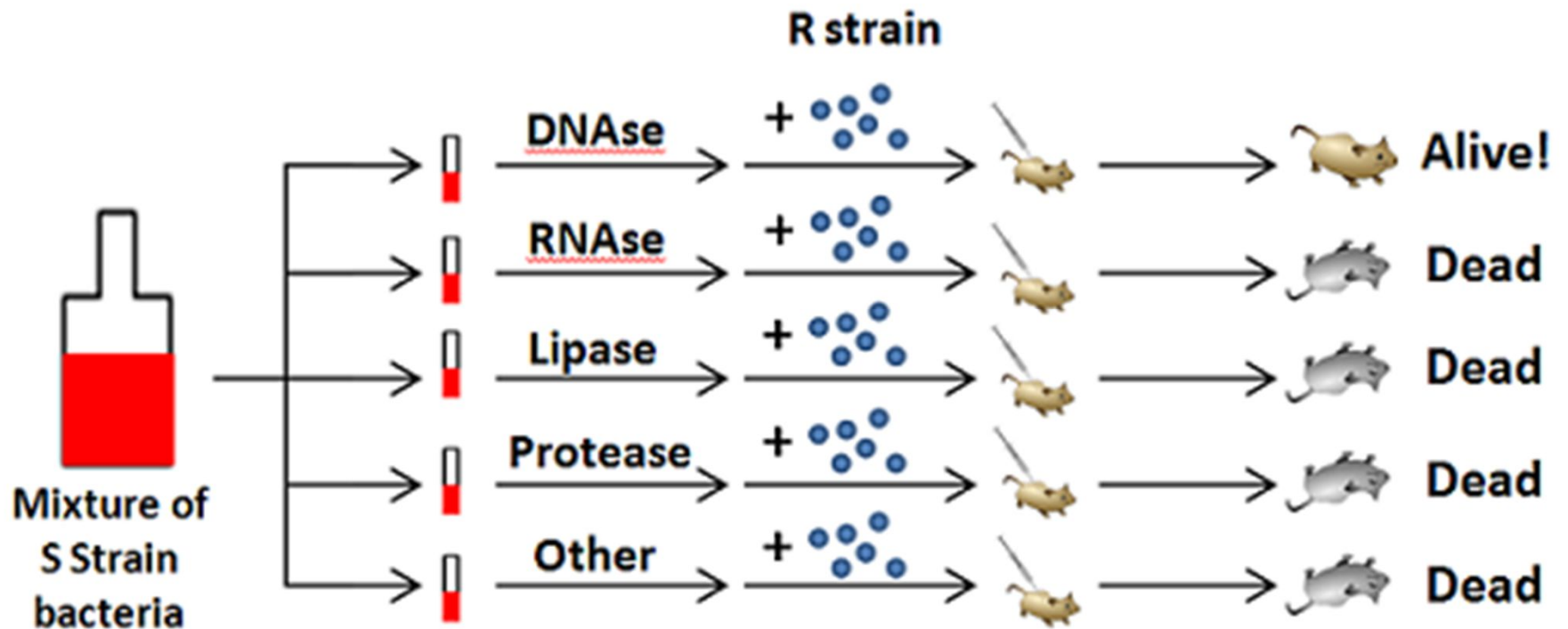
Discovery of the Genetic Material



Discovery of the Genetic Material

- Oswald Avery (1944)
 - Identified what transformed the bacteria
 - Exposed bacteria cells to DNA, protein and lipids from the deadly strain
 - The DNA changed the bacterial cells, no other macromolecule did
 - Showed that DNA was responsible for transformation
 - Many scientists still did not believe the results

Discovery of the Genetic Material



Discovery of the Genetic Material

- Alfred Hershey and Martha Chase (1952)
 - Used a bacteriophage (virus that attacks bacteria)
 - Made of DNA and protein
 - Remember that viruses cannot replicate themselves
 - Must inject themselves into a living cell to reproduce
 - Hershey and Chase labeled both parts to see which one transformed the cells

Discovery of the Genetic Material

- Used radioactive labeling
 - Trace the DNA and protein as the phages replicated
- The results showed no sulfur in the protein track
- The results showed phosphorus in the DNA track
- **THIS MEANS DNA IS THE GENETIC MATERIAL**

